

Table S.7-1
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Geology & Soils	Potential for seismic hazards and ground shaking activities	No Impact	No Impact	Potential for seismic hazards and ground shaking activities	<ul style="list-style-type: none">• Hinge restrainers to hold together superstructure elements• Heavy keys to limit movement• Increased reinforcement in column sections	Less than significant
	Potential for liquefaction activities	No Impact	No Impact	Potential for liquefaction activities	Detailed geotechnical studies which include: <ul style="list-style-type: none">• Precise location of potential liquefaction areas• Borings• Establishment of engineering criteria for ground acceleration	Less than significant
	Potential for expansive soils	No Impact	No Impact	Potential for expansive soils	<ul style="list-style-type: none">• Small structures will be strengthened• Soils will be stabilized• Appropriate foundation types and depths will be designed	Less than significant
	Potential for soil erosion	No Impact	No Impact	Potential for soil erosion, disturbance of soil in riverbeds, and redesigning of drainage which may result in slope erosion	<ul style="list-style-type: none">• Replacement of soil, treatment with lime, or supporting of structures on deep foundation• Erosion control measures such as replacement of soil, treatment with lime, or supporting of structures on deep foundations• Excavating and appropriately disposing of excess soil• Construction work will be limited within riverbeds when water is present• Roadway and bridge deck drainage will outlet under bridge abutments onto energy dissipaters	Less than significant
Hydrology, Floodplains, & Water Quality	Potential storm water and surface water pollution	No Impact	No Impact	Potential storm water and surface water pollution	<ul style="list-style-type: none">• Conform to the requirements of the Caltrans statewide and general NPDES Storm Water Permit• Develop a SWPPP and approve prior to construction• Implement temporary and permanent BMPs	Less than significant
	Potential impacts on groundwater availability	No Impact	No Impact	Potential impacts on groundwater availability	Implement temporary and permanent BMPs	Less than significant
	Potential for new/enlarged structures	No Impact	No Impact	Potential for new/enlarged structures	Design structures such that they will not be allowed to result in a 0.3-meter or greater impact in floodplain elevation	Less than significant

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Biology	Impacts to streambeds and associated habitat	No Impact	No Impact	Impacts to streambeds and associated habitat	Comply with provisions of 1600 (DFG), 404 (ACOE), and 401 (RWQCB)	Less than significant
	Impacts to existing native trees	No Impact	No Impact	Impacts to existing native trees	<ul style="list-style-type: none">Avoid removing native treesReplacement of native trees	Less than significant
	Impacts to construction in Santiago Creek	No Impact	No Impact	Impacts to construction in Santiago Creek	<ul style="list-style-type: none">Invasive weed removalIf feasible, no vegetation will be removed during bird nesting seasonIf not, conduct pre-construction surveysMeasures would be in place to minimize harm to bats such as pre-construction surveys by a qualified bat biologist	Less than significant
	Potential spread of invasive species in the Santa Ana River and Santiago Creek	No Impact	No Impact	Potential spread of invasive species in the Santa Ana River and Santiago Creek	<ul style="list-style-type: none">Invasive plant removal prior to seed setIf not possible, removal measures will include methods to prevent the spread of seeds i.e., bags placed over plant prior to removal	Less than significant
	Impacts to bats, nesting swifts, swallows and other migratory birds	No Impact	No Impact	Impacts to bats, nesting swifts, swallows and other migratory birds	<ul style="list-style-type: none">If feasible, no vegetation will be removed during bird nesting seasonIf not, conduct pre-construction surveys for nesting birdsConduct pre-construction surveys on bridge structures for birds and batsExclude bats and nesting birds from bridge structure at appropriate timeFor swallows, no work to be performed during the bird nesting season, if not feasible other appropriate prevention mechanism to keep construction swallow freeFor bat habitat, structural modifications or minor superficial attachments may be needed. If so, appropriate resource agencies will be contacted.	Less than significant
Wetlands & Waters of the U.S.	Erosion and runoff may affect wetlands and waters of the US	No Impact	No Impact	Erosion and runoff may affect wetlands and waters of the US	<ul style="list-style-type: none">Implementation of appropriate erosion and runoff controls will be designed which include berms to channel runoff to a collection areaAppropriate permits required by resource agencies will be obtained which may include invasive weed removalMitigation efforts must be coordinated with other mitigation projects including but not limited to those by the City of OrangeAccess routes in the creek area will be limited to designated routes	Less than significant
Cultural Resources	Potential unearthing of unknown buried cultural materials	No Impact	No Impact	Potential unearthing of unknown buried cultural materials	<ul style="list-style-type: none">Monitor earth moving activitiesWork will be halted if cultural materials are encounteredFurther mitigation would be in accordance of 36 CFR 800.13	Less than significant for the Preferred Alt. Potentially significant for Full Build (along the P.E. Arterial)
	Potential disturbance of human remains and associated artifacts	No Impact	No Impact	Potential disturbance of human remains and associated artifacts	Follow provisions of PL-101-601, Section 5097.98 and .99 of the Public Resources Code, and Section 7050 of the Health and Safety Code will be followed	Less than significant
	No Impact	No Impact	No Impact	Potential damage to historic properties listed after ROD/NOD	Coordinate with local agency/sponsor for listed properties	Significant for Full Build
	No Impact	No Impact	No Impact	Removal of the Pacific Electric Santa Ana Bridge	Execute MOA and follow measures required in the MOA	Significant for Full Build

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Community Cohesion	Loss of 472 on-site parking spaces at four locations	No Impact	No Impact	Loss of 571 on-site parking spaces at six locations	Replacement parking	Significant for the Preferred Alt. Significant for Full Build Alt
	Incompatible with local land use zoning	No Impact	No Impact	Incompatible with local land use zoning	Noise barriers and landscaping and aesthetics treatments	Less than significant for Preferred Alt. Significant for Full Build Alt
	No Impact	Inconsistent with some Land Use Plans and Policies	Inconsistent with some Land Use Plans and Policies	No Impact	None available	Significant for No Build & TSM/Expanded Bus Service
	2 residential units and 10 non-residential units displacements	No Impact	No Impact	144 residential units and 39 non-residential units displacements	Relocation Assistance Program	Less than significant for the Preferred Alt. Significant for Full Build Alt
	54 residential and 14 non-residential partial acquisitions	No Impact	No Impact	69 residential and 19 non-residential partial acquisitions. Change in Sherwood Lane Community.	Compensation for acquisition of properties in accordance with the State and Federal uniform relocation act. The affected property owner(s) would be compensated at fair market value.	Less than significant for the Preferred Alt.Less than significant for Full Build Alt
	No Impact	No Impact	No Impact	Use of former Pacific Electric right-of-way for motorized vehicles would be inconsistent with local land use	None available	Significant for Full Build
Transportation & Circulation	1 intersection impacted	No Impact	No Impact	3 intersections impacted	Additional lanes required	Less than significant
	No Impact	No Impact	No Impact	SR-22/SR-55 connector would increase demand on SR 55 north	None feasible	Significant for Full Build
Air Quality	Would not exceed the SIP budget for criteria pollutants	Would not exceed the SIP budget for criteria pollutants	Would not exceed the SIP budget for criteria pollutants	Would not exceed the SIP budget for criteria pollutants	None proposed	Less than significant

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Noise	Substantial noise increases	No Impact	No Impact	Substantial noise increases	Noise barriers	Less than significant
	Potentially significant noise impacts inside school classrooms	No Impact	No Impact	Potentially significant noise impacts inside school classrooms	Noise abatement	Less than significant
	Conflict with local noise ordinances	No Impact	No Impact	Conflict with local noise ordinances	Comply with local noise ordinances and regulate the hours for construction activity	Less than significant
	Construction noise	No Impact	No Impact	Construction noise	<ul style="list-style-type: none">Natural and artificial barriersNoise barriers and noise barrier additions required for long-term noise abatement/mitigation will be constructedWhere pile driving would occur near sensitive receptors use alternate methodsComply with Caltrans Standard Specifications, Sound Control Requirements and all local sound-control and noise level rulesUse mufflers for internal combustion enginesHold community meetingsNoise barrier for Rossmoor area	Less than significant
	No Impact	No Impact	No Impact	Noise impacts at commercial properties with outdoor uses	Noise barriers	Less than significant
	No Impact	No Impact	No Impact	Noise impacts from multiple reflections between parallel noise barriers	Additional study would be required during final design to recommend measures which may include providing a sound absorptive finish to the traffic side of each barrier	Less than significant
Parks & Recreation	Break in continuity of Santa Ana River Trail	No Impact	No Impact	Break in continuity of Santa Ana River Trail	Grade separations will be provided at all crossings of Santa Ana River Trail. This facility will remain open during construction; a temporary detour plan will be provided in coordination with the City of Orange.	Less than significant
	No Impact	No Impact	No Impact	Preclusion of Pacific Electric right-of-way trail	None available	Significant for Full Build
Utilities	Potential disruption of utility service	No Impact	No Impact	Potential disruption of utility service	<ul style="list-style-type: none">Comply with standard construction practices and proceduresComply with provisions of PUC general order No. 131-DFinal plans will be made available to affected utility purveyorsProvide signed final plans and revisions to the Gas Company	Less than significant

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Hazardous Materials/Waste	Encountering hazardous material during construction	No Impact	No Impact	Encountering hazardous material during construction	<ul style="list-style-type: none">Conduct ISA and if there is potential for contamination a site investigation would be conductedIf necessary Phase II or Phase III may be conductedDuring construction the contractor would implement the health and safety plan, site-specific management plans, removal of storage tanks, and a contingency plan	Less than significant
	Safety impacts for construction workers and third parties	No Impact	No Impact	Safety impacts for construction workers and third parties	Prepare Health and Safety plan by a certified industrial hygienist	Less than significant
	Potential solid and groundwater contamination	No Impact	No Impact	Potential solid and groundwater contamination	Implement a soils and groundwater contaminant management plan	Less than significant
	Aboveground and underground storage tank removal	No Impact	No Impact	Aboveground and underground storage tank removal	Removal of storage tanks following procedures including sampling procedures	Less than significant
	Unidentified hazardous materials	No Impact	No Impact	Unidentified hazardous materials	Prepare contingency plan and notify National Response Center to coordinate clean up.	Less than significant
	Asbestos, lead-based paint and aerially deposited lead	No Impact	No Impact	Asbestos, lead-based paint and aerially deposited lead	<ul style="list-style-type: none">Prior to demolition, structures would be evaluated for presence of asbestos, ADL, or LBPFor asbestos, an EPA/AHERA-certified building inspector will collect samples and would be analyzed per EPA Interim Method and McCrone Research Institute's The Asbestos Particle Atlas using PLM. Classifications and determinations of ACM is based on current regulatory informationIf LBP is discovered, proper disposal procedures will be enactedIf soils with ADL is present less than 50mg/liter it can be reused with restrictions and if soils does not meet these restrictions they must be disposed of at Class 1 site.	Less than significant
	Hazards from radon and methane gas	No Impact	No Impact	Hazards from radon and methane gas	<ul style="list-style-type: none">Prior to demolition, areas would be tested for presence of radon and methane gasIf present measures would be taken to reduce risk	Less than significant
	Potential hazards related to hazards materials used	No Impact	No Impact	Potential hazards related to hazards materials used	<ul style="list-style-type: none">Materials used would be evaluated prior to their use for their level of hazardManufacture's directions and warnings will be followed	Less than significant

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Visual Resources	Reduction of visual quality in residential neighborhoods from loss of homes and landscaping	No Impact	No Impact	Reduction of visual quality in residential neighborhoods from loss of homes and landscaping	Landscaping would be designed to provide a buffer	Less than significant
	Loss of freeway landscaping	No Impact	No Impact	Loss of freeway landscaping	<ul style="list-style-type: none">• Preserve landscaping within state ROW as much as possible• Landscaping will be replaced at a one-to-one ratio	Potentially significant for Preferred Alt. & Full Build
	Replacement of landscaping with hard surfaces such as soundwalls and structures	No Impact	No Impact	Replacement of landscaping with hard surfaces such as soundwalls and structures	<ul style="list-style-type: none">• Use of vines, trees, or shrubs• Graffiti-resistant surfaces shall be used	Potentially significant Preferred Alt. & Full Build
	Potential conflict with policy requiring California native wildflowers	No Impact	No Impact	Potential conflict with policy requiring California native wildflowers	California wildflowers will be included	Less than significant
	Impacts to trail continuity	No Impact	No Impact	Impacts to trail continuity	Grade separations will be provided at Santa Ana River crossings	Less than significant for Preferred Alt. and Significant for Full Build Alt (Class 1, Pacific Electric Trail)
	Reduced visual quality in views from and of freeway	No Impact	No Impact	Reduced visual quality in views from and of freeway	Objectionable views shall be screened and replacement planting could be used	Less than significant
	Inconsistency with Caltrans visual policy	No Impact	No Impact	Inconsistency with Caltrans visual policy	<ul style="list-style-type: none">• Select planting that provides long-term benefits, use plant materials that require minimum irrigation and maintenance, and follow the Highway Design Manual.• Execute cooperative agreements• Coordinate with local governments	Less than significant
	Loss of freeway-oriented signage	No Impact	No Impact	Loss of freeway-oriented signage	Signage's removed will be appropriately placed within view from freeway and replaced signage will be placed according to local zoning ordinances. Removed boards would be compensated in accordance of the California Constitution	Less than significant
	No Impact	No Impact	No Impact	Potential conflict with Orange County's master Plan of Freeway and Transit corridor Enhancements	Incorporate the Historic Agriculture/Orchard design theme and the Coastal design theme	Less than significant
	No Impact	No Impact	No Impact	Loss of open space in former Pacific Electric ROW	Screening vegetation will be used; landscaping will be consistent with plans of City of Santa Ana	Potentially significant for Full Build
	No Impact	No Impact	No Impact	New sources of light/levels in the former Pacific Electric ROW	Limit lighting and direct lighting away from adjacent properties	Potentially significant for Full Build
	Views of the proposed I-405/I-605 direct HOV Connector	No Impact	No Impact	Views of the proposed I-405/I-605 direct HOV Connector	Use of tall, fast growing trees or shrubs	Less than significant

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Energy	No Impact	No Impact	No Impact	No Impact	None	
Construction-related Impacts	Potential impacts from shallow groundwater lenses and potential pollution of runoff during dewatering operations	No Impact	No Impact	Potential impacts from shallow groundwater lenses and potential pollution of runoff during dewatering operations	Dewatering measures will be used, disposal of excess water will comply with applicable NPDES permit and Caltrans Standards	Less than significant
	Potentially impacts from temporary construction easements	No Impact	No Impact	Potentially impacts from temporary construction easements	Supplemental environmental analysis and documentation will be required	Less than significant
	Views of construction staging areas	No Impact	No Impact	Views of construction staging areas	Locate construction staging areas inconspicuously	Potentially Significant
	Traffic disruption during construction	No Impact	No Impact	Traffic disruption during construction	Establish and implement a TMP	Less than significant
	Traffic disruption during construction affect school bus and emergency response routes	No Impact	No Impact	Traffic disruption during construction affect school bus and emergency response routes	Provide a copy of the proposed construction schedule and detour information	Less than significant
	Impacts on capacity of landfills due to demolition	No Impact	No Impact	Impacts on capacity of landfills due to demolition	Integrate recycling programs into their bid proposals	Less than significant
	Potential earthquake damage during construction	No Impact	No Impact	Potential earthquake damage during construction	<ul style="list-style-type: none">• Use of shoring and falsework to support structures• Limiting access to dangerous areas	Less than significant

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